

IFW

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Diyun Huang et al.
Serial No. : 10/714,387
Filed : November 14, 2003
Title : CROSSLINKED COMPOSITIONS COMPRISING A POLY(ARYLENE ETHER)
AND A NONLINEAR OPTICAL CHROMOPHORE, AND DEVICES
INCORPORATING SAME

Art Unit : 1764
Examiner : Duc Truong

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY TO ACTION OF MAY 13, 2005

In reply to the Office Action of May 13, 2005, Applicant submits the following remarks.

Claims 1-29 and 40 are pending, and stand rejected under 35 U.S.C. §103 over Lau et al., U.S. 6,313,185 ("Lau") in view of Mandal et al., U.S. 5,484,821 ("Mandal"). Applicant requests the Examiner to reconsider and withdraw the rejection for the following reasons.

Lau, the primary reference, describes nanoporous materials prepared from polymers having crosslinkable groups (e.g., acetylene groups) incorporated in the backbone of the polymer. Lau defines the "backbone" as "a contiguous chain of atoms or moieties forming a polymeric strand [that] are covalently bound such that removal of any of the atoms or moiety would result in interruption of the chain" (col. 5, lines 8-11), and states that "[r]eactive groups are contemplated to be positioned in any part of the backbone, including the termini" (col. 6, lines 2-3). It is these reactive groups incorporated in the backbone that effect crosslinking.

The presence of crosslinkable groups in the backbone of the polymer, as opposed to a pendant group attached to the backbone, is a critical feature of the polymers described in the Lau

CERTIFICATE OF MAILING BY FIRST CLASS MAIL

I hereby certify under 37 CFR §1.8(a) that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage on the date indicated below and is addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

August 1, 2005
Date of Deposit

Judith A. Witzel
Signature

Judith A. Witzel
Typed or Printed Name of Person Signing Certificate

patent. In fact, Lau criticizes prior art polymers in which crosslinking was effected via pendant functional groups (col. 2, lines 22-41):

Surprisingly, despite great efforts to improve various properties in nanoporous materials, and considerable work in improving crosslinking in nanoporous materials, there is no general method for crosslinking (a) without relying on exogenous crosslinking molecules, and (b) without adding pendent [sic] functionalities to the monomers. Therefore, there is still a need for methods and compositions that circumvent these limitations.

The present invention provides methods and compositions in which nanoporous materials are fabricated from fluorinated and nonfluorinated polymers having backbones with flexible structural moieties and with reactive groups used in crosslinking.

In contrast to the polymers that Lau describes, claims 1-29 and 40 specifically require the crosslinkable group to be present in the form of a pendant group. Claims 1-29 and 40, therefore, cover polymers having structures criticized by Lau.

Applicants further note that the Examiner appears to be confusing “thermolabile” portions of the molecules described in Lau with crosslinkable groups. Lau defines “thermolabile” groups as groups that produce structures that decompose at elevated temperatures (see col. 5, lines 19-21). Thermolabile groups, therefore, are the opposite of crosslinkable groups. The latter are designed to produced crosslinked structures that resist decomposition at elevated temperatures. Thus, it is not true, as the Examiner asserts on p. 3 of the Office Action, that “the Lau references does disclose the reaction product of a difluoroaromatic component with an aromatic bisphenol then with another component for cross-linking.”

Lau, therefore, teaches away from the polymers that are the subject of Applicants' claims. Mandal, the secondary reference, fails to cure the deficiencies of Lau. Therefore, the claims would not have been obvious over the cited references, and the rejection should be withdrawn.

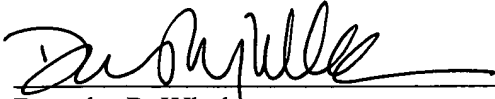
Please apply any charges or credits to deposit account 06-1050.

Applicant : Diyun Huang et al.
Serial No. : 10/714,387
Filed : November 14, 2003
Page : 3 of 3

Attorney's Docket No.: 14414-014001

Respectfully submitted,

Date: August 1, 2005


Dorothy P. Whelan
Reg. No. 33,814

Fish & Richardson P.C., P.A.
60 South Sixth Street
Suite 3300
Minneapolis, MN 55402
Telephone: (612) 335-5070
Facsimile: (612) 288-9696

60307719.doc